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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,831	07/14/2003	Christopher Anthony Kaminski	839-1360	5219

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EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n N . 6

10/617,831

Applicant(s)

KAMINSKI ET AL.

Examin r

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on 08 August 2003 has been considered by the examiner.

### *Drawings*

2. New corrected drawings are required in this application because the informal drawings are blurred and it is difficult to see the details and reference numbers. For example, Fig.3 appears to be a photocopy and it is impossible to make out what portions of the rotor many of the reference number lines point to because the rotor is almost completely a black mass. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### *Claim Objections*

3. Claims 7 and 11 are objected to because of the following informalities: "hoop discontinuous" is not clear. Does this mean "hoop-sectioned", i.e., with a longitudinal cut, as described in p.5, in paragraph 18 of the specification? Also, should "close loop end circuits" be --closed loop end circuits--? Appropriate correction is required.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6, 8-10 and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Shah et al. (US 6,509,664). The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Shah teaches a rotor configuration for an electric machine, the rotor configuration comprising: a rotor shaft (not shown, inherent); a multi-pole rotor core 16 (with plural poles 536) secured to the rotor shaft (Figs.1&8); a plurality of field winding modules 524 respectively disposed over each pole of the multi-pole rotor core (Fig.8); an enclosure (shell) 513 disposed over the field winding modules 524 and containing the field winding modules over the rotor core (Fig.8); and a magnetic shield 515 disposed over the field winding modules 524 between the field winding modules and the enclosure 513 (Fig.8).

Regarding claims 2 and 12, the shell 513 inherently reads on "a one-piece tube shaped to fit over the multi-pole rotor core [16], the field winding modules [524], and the magnetic shield [515]."

Regarding claim 3, the shell may comprise plural rings, each ring comprising a lamination (c.3, lines 40-47).

Regarding claim 4, the shell inherently 513 encloses the field winding modules over the entire rotor length.

Regarding claims 5-6, the shell may be a metal or a composite such as carbon (c.3, lines 36-38).

Regarding claim 8, the shield may be incorporated into the one-piece shell (c.3, lines 47-54).

Regarding claims 9 and 13, the shield comprises a non-magnetic electrical conductor such as aluminum or copper (c.3, lines 53-54).

Regarding claim 10, the embodiment of Fig.8 shows a two-pole rotor. The windings 524 comprise a pair of windings disposed over the poles. The shell may comprise plural rings, each ring comprising a lamination (c.3, lines 40-47).

Regarding claim 14, the claimed method steps are inherent in the manufacture of the rotor apparatus taught by Shah.

6. Claims 1, 4-5, 9 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Driscoll (US 6,169,353). Driscoll teaches a rotor configuration for an electric machine; the rotor configuration comprising: a rotor shaft 22; a multi-pole rotor core 24/26 (with plural poles formed by outer surfaces 25) secured to the rotor shaft (Figs.1&2); a plurality of field

winding modules 32 respectively disposed over each pole of the multi-pole rotor core (Fig.3); an enclosure (vacuum can) 44 disposed over the field winding modules and containing the field winding modules over the rotor core (Fig.8); and a magnetic shield comprising aluminum shell 36 disposed over the field winding modules between the field winding modules and the enclosure 513 (Fig.8; c.4, lines 10-11). Regarding claim 14, Driscoll also teaches a method of manufacture (c.2, line 63-c.3, line 9).

7. Claims 1-4 and 6-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Mullahalli et al. (EP 1,124,304). Mullahalli teaches a rotor configuration for an electric machine, the rotor configuration comprising: a rotor shaft (inherent); a multi-pole rotor core 32 (two-pole) secured to the rotor shaft; a plurality of field winding modules 34 respectively disposed over each pole of the multi-pole rotor core (Fig.4); an enclosure 10 disposed over the field winding modules 34 and containing the field winding modules over the rotor core 32 (Fig.4); and an electrically-conductive (e.g., aluminum) magnetic shield 40 disposed over the field winding modules between the field winding modules and the enclosure (Fig.4; c.3, lines 3-6).

Regarding claims 2-3, the enclosure 10 may comprise a singular continuous tube or ring assembly (c.3, lines 28-29).

Regarding claims 4 and 6, the enclosure 10 extends the length of the rotor core (Fig. 2) and may comprise composite material (c.2, lines 49-59)

Regarding claims 7-8, the shield 40 may comprise plural pieces forming slits or hoops and axial end members (Figs.4-5; c.2, lines 1-5; c.3, lines 28-28), or a one-piece tube (Fig.6).

*Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Driscoll in view of MacNab et al. (US 3,679,920). Driscoll does not teach a magnetic shield with slits.

MacNab teaches a superconducting machine including a rotor with an inner support cylinder 11a supporting field winding 12 (Fig.1). A highly conductive metal electromagnetic flux screen 22 surrounds the field winding. The screen may comprise strips extending longitudinally over the support cylinder, with one or more circumferential turns of strip at either end of the support cylinder (c.5, lines 7-10). This strip-form screen thus comprises a flux shield with slits. The strip-form screen minimizes AC loss since the strips are wound to follow the paths of circulating current (c.5, lines 3-10).

It would have been obvious to modify Driscoll and provide slits in the shield per MacNab since this would have been desirable to minimize AC loss.

10. Claims 1, 3-7, 9-11, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata (JP 63-310367) in view of MacNab et al. (US 3,679,920). Numata teaches the basic superconductive rotor configuration including: a rotor shaft 2; a two-pole rotor core 14 secured to the shaft 2; a pair of field windings 1A-1D respectively disposed over each pole 14 of the two-pole rotor core; and an enclosure/container 6 disposed over the

windings over a length of the rotor core. Numata does not teach that the enclosure comprises metallic or composite structural rings, or a magnetic shield disposed over the field windings between the windings and the enclosure.

MacNab teaches a superconducting machine including a rotor with an inner support cylinder 11a supporting field winding 12 (Fig.1). A highly conductive metal electromagnetic flux screen 22 surrounds the field winding. The screen may comprise strips extending longitudinally over the support cylinder, with one or more circumferential turns of strip at either end of the support cylinder (c.5, lines 7-10). This strip-form screen thus comprises a flux shield with slits. The strip-form screen minimizes AC loss since the strips are wound to follow the paths of circulating current (c.5, lines 3-10). MacNab further teaches an outer wall formed from a plurality of rings 23 of high-strength material such as titanium alloy or synthetic or carbon fibers which are shrink-fitted onto the screen (c.3, lines 1-7 & 27-29). The outer wall of metal or carbon rings separates the vacuum space and provides a strong construction to withstand mechanical forces (c.1, line 70-c.2, line 5).

It would have been obvious at the time of the invention to modify Numata's rotor and provide an enclosure comprising rings and a magnetic shield per MacNab since this would have provided a strong rotor construction and would have minimized AC losses.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being obvious over Mullahalli in view of MacNab. Mullahalli's enclosure 10 may be formed from materials suitable as high-strength materials (c.2, lines 54-57), but he does not teach a metal, per se.

MacNab teaches an outer wall formed from a plurality of rings 23 of high-strength material such as titanium alloy or synthetic or carbon fibers which are shrink-fitted onto a



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magnetic shield/screen 22 (c.3, lines 1-7 & 27-29). The outer wall of metal or carbon rings separates the vacuum space and provides a strong construction to withstand mechanical forces (c.1, line 70-c.2, line 5).

It would have been obvious to modify Mullahalli and provide a metal enclosure per MacNab since a metal would have been a suitable high-strength material to provide a strong construction for the rotor enclosure so that the rotor could withstand mechanical forces.

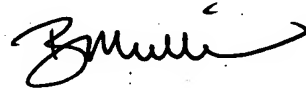
### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 571-272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins  
Primary Examiner  
Art Unit 2834

bsm  
20 May 2004